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Schaller
Messtechnik / humimeter.com

Moisture meter

Instruction manual humimeter FLH

Measuring device for determining the water content of hops and hemp flowers

78.0°F | 6.16% | 456kg/m3 | -27.3td | 0.64aw| 51.9%r.H. | 14.8%abs | 100.4g/m³ | 09m/s |

Version 2.6

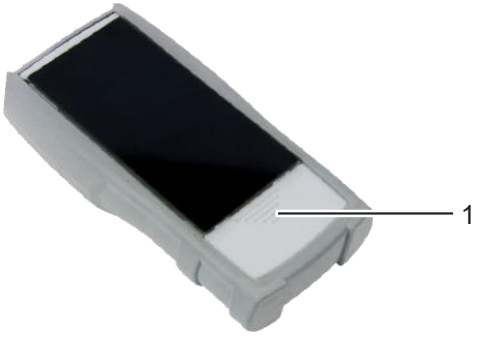
Read the operating instructions before starting all work!

Overview of your humimeter FLH

Front Overview

No	Description
1	Connection for sensors
2	USB interface (optionally available)
3	Display
4	Keyboard
5	Rubber protection

Overview back



No	Description
1	Battery compartment

Overview of external sensors

Art.Nr. 13158 Piercing probe

Measurement	Measuring range	Resolution	Accuracy
Water content:	4 to 40 %	0,1 %	
Temperature °C:	-15 to +85 °C	0.5 °C	+/-0.5 °C (at 25 °C)
Temperature °F:	5 to 185 °F	0.9 °F	+/-0.5 °F (at 77 °F)

Art.Nr. 13736 Cone Sensor

Measurement	Measuring range	Resolution	Accuracy
Water content:	4 to 40 %	0,1 %	
Temperature °C:	-15 to +85 °C	0.5 °C	+/-0.5 °C (at 25 °C)
Temperature °F:	5 to 185 °F	0.9 °F	+/-0.5 °F (at 77 °F)

Art.Nr. 12004 LF_TB 120 Precision Humidity Temperature Probe

Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 1.5% RH (at 25°C)
Temperature °C:	-20 to +120 °C	0.1 °C	+/- 0.3 °C (at 25 °C)
Temperature °F:	-4 to 248 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.Nr. 12032 Humidity Temperature Sensor

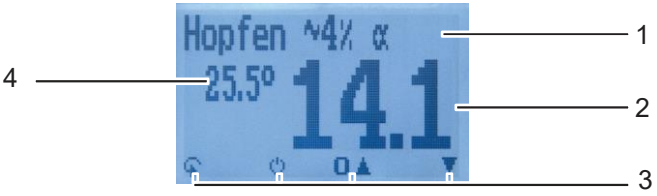
Measurement	Measuring range	Resolution	Accuracy
Relative humidity:	0 to 100% RH	0,1 %	
Calibration:	10 to 90% RH		+/- 2.0 %RH (at 25 °C)
Temperature °C:	-20 to +85 °C	0.1 °C	+/- 0.3 °C (at 25 °C)

Temperature °F:	-4 to 185 °F	0.2 °F	+/- 0.5 °F (at 77 °F)

Art.Nr. 12513 IR Temperature Sensor

Measurement	Measuring range	Resolution
IR Temperature °C	-25 to +125 °C	0.1 °C
IR Temperature °F	-13 to 257 °F	0.2 °F

Overview Display



No	Description
1	Characteristic curve
2	Water content in % ("6.1 Definition of water content")
3	Display icons
4	Temperature display

Overview Display Icons

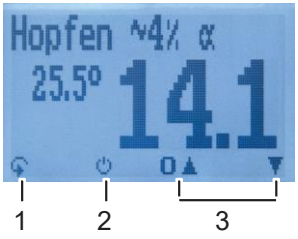
Symbol	Description
	Confirm
	Back to top
	Back to bottom
	Back
	Enter numbers
	Enter letters
	Continue or Right
	Links
	Yes

Symbol	Description
	No
	Switch Input Level
	OK
	Switch menu level
	Enter data
	View measurement series
	Delete measurement series
	Power off/display illumination
	Save the measured value

Overview Layers

The device has three different levels: product selection level, storage level, and main menu:

Product selection level



No	Description
1	Change Layer
2	Turn on the display backlight/turn off the device
3	Navigating between the characteristic curves

Memory level

No	Description
1	Change Layer
2	Turn on the display backlight/turn off the device
3	Save the measured value
4	View recently saved metrics

Main Menu

The main menu includes the following menu items:

- **Data storage:**
  Manual Logs, Delete Logs
- **Print logs :**
  Last Row, All Logs, Clear Logs
- **Send logs :**
  Manual Logs, Delete Logs
- **Options:**
  Bluetooth, Date/Time, Data Log Time, Emissivity, Voice, Unlock, °C/°F, operating level, burn time, switch-off time, adjust, calibrate, grade calibration, send online, password, reset
- **Status**

Table of Contents

1. Introduction

1.1 Information about this instruction manual

This instruction manual enables the safe and efficient handling of the humimeter FLH. The operating instructions are part of the device and must be kept in its immediate vicinity for the operator to access at all times.

The operator must have read and understood this instruction manual carefully before commencing any work. The basic prerequisite for safe working is compliance with all the safety instructions and instructions given in this operating manual.

1.2 Limitation of Liability

All information and information in this operating manual has been compiled taking into account the applicable standards and regulations, the state of the art as well as the many years of knowledge and experience of Schaller GmbH.

Schaller GmbH assumes no liability for damage in the following cases and the warranty claims expire:

- Failure to follow the instructions
- Unlawful use
- Insufficiently qualified operator
- unauthorized conversions
- Technical changes
- Use of non-approved spare parts

This rapid measurement method can be influenced by various boundary conditions. We therefore recommend checking the measurement results at periodic intervals by means of a standard-compliant drying sample.

1.3 Symbols used

Safety instructions are indicated by symbols in this user manual.

CAUTION

Failure to do so can result in minor or moderate injuries.

NOTE

Failure to do so can result in property damage.

Information

Identifies important information, the observance of which results in a more efficient and economical use.

1.4 Customer Service

For technical information, please contact our customer service: Schaller

Messtechnik GmbH
Max-Schaller-Straße 99
A - 8181 St.Ruprecht an der Raab

Phone: +43 (0)3178 28899
Fax: +43 (0)3178 28899 - 901

E-mail: info@humimeter.com
Internet: www.humimeter.com

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2. For your safety

The device complies with the following European directives:

- Restriction of hazardous substances in electrical and electronic equipment (RoHS Directive)
- Electromagnetic compatibility (EMC Directive)

The device is built according to the latest state of the art. Nevertheless, there are residual dangers .

To avoid danger, you must follow the safety instructions.

2.1 Intended use

- Rapid measuring device for determining the water content of hops
- Only products that are defined below in these instructions may be measured (see "6. Products and characteristic curves").

2.2 Improper use

- No rain-soaked and moldy hops may be measured.
- No rain-soaked and moldy hay/straw may be measured.
- The device is not waterproof, protect it from water and fine dust (IP40).

2.3 Qualification of the operator

Only persons who can be expected to carry out the work reliably are permitted to operate the device. Persons whose ability to react is affected, e.g. by drugs, alcohol or medication, are not admitted.

Persons using this device must have read and understood the user manual and follow its instructions.

2.4 General Security

Observe the following safety instructions to avoid personal injury and property damage :

- Remove the batteries from the device if it will not be used for an extended period of time.
- Keep the measuring tip away from the body during all activities.
- Keep the measuring tip away from the body of others during all activities.
- If you notice any loose parts or damage to the device, remove the batteries and contact your dealer.

Before your device is delivered, all technical characteristics have been checked and subjected to precise quality control. There is a serial number in each device. This sticker must not be removed.

2.5 Warranty

Excluded from the warranty:

- Damage caused by non-observance of the operating instructions
- Damage caused by third-party interventions
- Products that have been improperly used or altered without authorization
- Products where the warranty seal is missing or has been damaged
- Damage due to force majeure, natural disasters, etc.
- Damage due to improper cleaning
- Damage due to leaked batteries
- Damage caused by improper load (pressure, bending) of the lance or the measuring head
- Damage caused by dropping the measuring head

2.6 Packaging

- Do not dispose of the packaging!
- In the event of a warranty claim, the measuring device must be returned in the original cardboard cylinder .

» If, in the case of transport in a different packaging, damage occurs during transport, the warranty claim expires.

3. Get started

3.1 Unboxing the device

- Unpack the device.
- Immediately after unpacking, check the integrity and completeness of the device.

3.2 Check the scope of delivery

Check the list below to check the completeness of the delivery:

- humimeter FLH
- 4pcs AA Alkaline Batteries
- Rubber protection
- Cardboard cylinder
- Required

accessories:

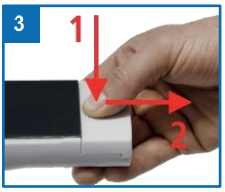
- External sensors (see "Overview of external sensors" page 3)

Optional accessories:

- humimeter USB data interface module - USB stick with LogMemorizer software (measurement data acquisition and evaluation software) and USB cable or download under humimeter.com/software
- Battery-powered portable thermal printer (can only be used in conjunction with humimeter USB data interface module) - Described in a separate user manual.
- Bluetooth module (can only be used in conjunction with humimeter USB data interface module) - Described in a separate user manual.
- Test block
- Wooden box
- Plastic case

3.3 Insert batteries

1. Remove the rubber protection of the device. Pull it at the top of the case. In the case of a screwed-on sensor, this must be unscrewed beforehand or, in the case of an optional USB interface,
pull out the protective cover of the USB socket beforehand (Fig. 1 and 2).



2. Take the device in one hand and press with your thumb on the engraved area of the battery cover (1). Now pull the battery cover downwards from the device (2) (Fig. 3).

3. In the battery compartment you will find four markings with Plus and minus symbols. Insert the batteries into the device according to the icons. Press the batteries down well - so that the batteries lie flat on the bottom of the case (Fig. 4).

» The device switches on automatically as soon as all batteries are inserted.

4. Slide the battery cover back onto the housing until it clicks into place. Then mount the rubber guard on the case - start with the side where the battery cover is located (Figure 5).

4. Basic operation

4.1 Turn on the device

- Press the ⏻ button for 3 seconds.

» The status indicator appears on the display (Fig. 6).

» The device turns on automatically after inserting the batteries.

4.2 Select characteristic curve

Prerequisite: The device is located in the product selection level (Fig. 7).

An overview of characteristic curves and the selection criteria for the characteristic curve to be selected can be found at: "6.

1. Press the ▽ button or △ button to advance one characteristic curve at a time Or
2. Press the ▽ button or △ button for 3 seconds to access the characteristic curve overview (Figure 8).
3. To switch one characteristic curve further at a time, press one of the arrow keys.
4. To scroll through the characteristic curves, hold down one of the arrow keys.
5. Confirm your selection with ↵.

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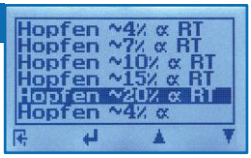

» The selected characteristic curve is shown at the top of the display.

4.3 Changing the sensor

- If a sensor is already screwed on, unscrew it counterclockwise.
- Plug the desired probe into the device until both threads are in place.

» Pay attention to the elevation in the connector and its correct positioning (Fig. 10).

» The sensor should be able to be plugged in without any effort.

- Now tighten the thread.

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4.4 Perform measurement

- The measurement is described in the chapter "5th measurement process".

4.5 Turn off the device

Prerequisite: The device is in the storage level or product selection level. It is not possible to switch off the device in the menu level.

- Press the ⏻ button for 3 seconds.

5. Measurement process

5.1 Prepare measurement

The prerequisite: The measuring device must be as close as possible to the temperature as the product to be measured. It is recommended to allow the measuring device to adjust to the temperature for at least 30 minutes near the product before measuring.

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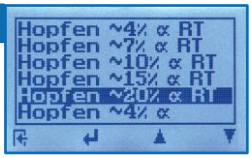
- Turn on the meter (see "4.1 Switching on the device").
- Connect the desired sensor to the measuring device (see "4.3 Changing the Sensor").

» The measuring device shows **sensor Missing** if no sensor is connected (Fig. 11).

12


- Select the desired characteristic curve (see "6. Characteristic curves"). To do this, press  or  (see "4.2 Select characteristic curve") (Figure 12).

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5.2 Perform measurement

5.2.1 Measurement with piercing probe:

The prerequisite is that the device has approximately the same temperature as the material to be measured.

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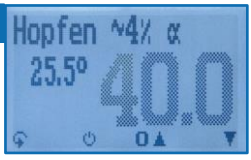
- Prick the measuring device with the measuring tip into the hops or hay/straw.

» The measuring head must not be bent or dropped.

» For hop bales, the injection direction is freely selectable. It should be noted that the measurement should only be carried out in the area of compaction.

» Round and square bales made of hay/straw must be measured at the front.

- The measured value is immediately displayed on the device's display.

15


» The displayed measured value flashes when it exceeds the measuring range of the selected characteristic curve (Fig. 15). A flashing value

signals the end of the measuring range. The measuring range depends on the characteristic curve (see "6.

» The device does not display a measured value (Fig. 13) if it falls below the lower limit of the measuring range of the selected characteristic curve. The measuring range depends on the characteristic curve (see "6.

» Now the displayed measured value can be saved on the device (see "5.5 Saving a single measured value" or "5.6 Storing multiple measured values (series of measurements)").

5.2.2 Measurement with cone sensor:

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The prerequisite is that the device has approximately the same temperature as the material to be measured.

- Fill measuring chamber painted full (Fig. 16).

» Make sure that the material is not pre-compacted.

- Place the shutter on the measuring chamber and turn it closed as far as it will go (Fig. 17).

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- When the measuring chamber is completely closed , the device immediately shows the measured value on the display.

» The displayed measured value flashes if it exceeds the measuring range of the selected characteristic curve (Fig. 18). A flashing value signals the end of the measuring range. The measuring range depends on the characteristic curve (see "6.

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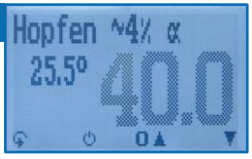

» The device does not display a measured value (Fig. 13) if it falls below the lower limit of the measuring range of the selected characteristic curve. The measuring range depends on the characteristic curve (see "6.

» Now the displayed measured value can be saved on the device (see "5.5 Saving a single measured value" or "5.6 Storing multiple measured values (series of measurements)").

5.2.3 Measurement with humidity sensor:

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The prerequisite: The device has about the same temperature as the material to be measured.

- After a sufficiently long adjustment time, the humidity and temperature value can be read off the display.

» The displayed measured value flashes if it exceeds the measuring range of the selected characteristic curve (Figure 20). A flashing value signals the end of the measuring range. The measuring range depends on the characteristic curve (see "6.

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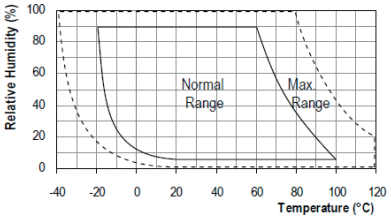
» Now the displayed measured value can be saved on the device (see "5.5 Saving a single measured value" or "5.6 Storing multiple measured values (series of measurements)").

Area of application for humidity sensors

The device operates within the specified accuracy in the normal range. Long-term use outside the normal range of application (max. range), especially with humidity above 80%, can lead to higher measurement deviations (+3% after 60 hours). When returning to the normal application range, the sensor returns to the specified accuracy by itself.



5.2.4 Measurement with IR temperature sensor

The prerequisite: The material to be measured is neither shiny nor reflectiv

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- Hold the meter with the sensor on an object.
- The device now shows the current temperature of the illuminated object.

» The sensor has a 1:10 optics. At a distance of one metre, a measuring window of 16 cm is created.

» Now the displayed measured value can be saved to the device (see "5.5 Saving a single measured value" or "5.6 Saving Multiple Measured Values (Measurement Se)").

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CAUTION

Risk of injury
Risk of injury from the measuring tip
- ► Keep the measuring tip away from the body during all activities.
- ► Keep the measuring tip away from the body of others during all activities.

NOTE - FOR HIGH MEASUREMENT INTERVALS

Due to a high number of measurements in a very short time, the measuring head heats up at high press densities. This leads to a falsification of the measurement result.

Information - Measurement Accuracy

Take advantage of the non-destructive measurement method in seconds and carry out measurements at several locations. The device automatically calculates the average value when the individual measured values are saved (see "5.6 Saving Multiple Measured Values (Measurement Series))".

Information - Incorrect measurements

Use the correct characteristic curve for your object to be measured. This will help you avoid incorrect measurements (see "11.

5.3 Easy user

The device can be configured in such a way that the user's access to the product selection level is restricted in combination with the hold function.

5.3.1 Easy user enable/disable

- Enabling/deactivating the simple user is described in chapter "9.7 Changing the Control Level".

5.3.2 Easier to use

The basic user offers the following limitations:

- The only available level is a slightly modified product selection level (Fig. 23).

» No access to memory level or main menu

- The layer change function has been replaced by the hold function (see "5.4 Hold Function - Freeze Measured Value Display").

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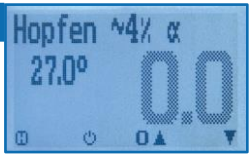

5.4 Hold function - freeze measured value display

The device can be configured to freeze the display until the next keystroke at the touch of a button. The function can be used, for example, when measurements have to be taken in places that are not visible.

5.4.1 Activate the hold function in the options

Prerequisite: The device is switched on and is located in the storage level.

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Data Log Time** (Figure 24). To do this, press or and confirm with .
4. Navigate to **Hold** (Figure 25). To do this, press or and confirm with .

» The setting has been saved.

5. Press to exit **the options**.
6. Press They to exit the main menu.

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5.4.2 Use the hold function

Prerequisite: The device is switched on and is located in the storage tier (see "Overview Layers" page 6).

- Press .

» The current display is frozen. All four display symbols show (Fig. 26).

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- Press any button to reactivate the frozen display.

5.5 Saving a single metric

The device can be configured to store a reading on the device for each keystroke. By default, this option (Manual Save) is enabled.

5.5.1 Enable manual saving in options

Prerequisite: The device is switched on and is located in the storage level.

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Data Log Time** (Figure 27). To do this, press or and confirm with .
4. Navigate to **Manual** (Figure 28). To do this, press or and confirm with .

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» The setting has been saved.

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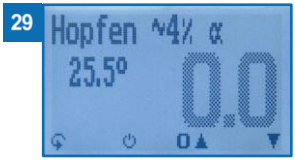
5. Press to exit **the options**.
6. Press They to exit the main menu.

5.5.2 Use manual saving

Prerequisite: The device is located in the storage layer (see "Storage level" page 7). The device is set to Data Log Time - Manual.

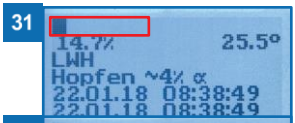


1. Press .

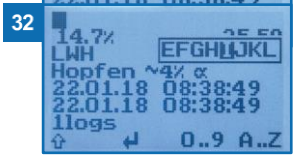
» The image 30 appears on the display - the number one is now in front of the disket symbol.

2. Press to add a name to the saved reading and complete the measurement.

» Picture 31 appears on the display.



3. If an input has already been made before, the input shown can be overwritten if desired.



4. Add letters :
   Press and A..Z hold to quickly navigate to the desired letter and stay on the desired letter for 3 seconds
   or press to copy the letter (Figure 32).

5. Add numbers:
   Press 0..9 and hold to quickly navigate to the desired number and stay on the desired number for 3 seconds or press to apply the number.

6. Navigate forward/back:
   Press to switch to another input layer. Navigate forward or back with or .

7. Confirm the entry with .

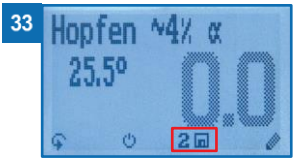
» The input has been saved.

5.6 Saving Multiple Metrics (Measurement Series)

Prerequisite: The device is switched on and is located in the storage level.

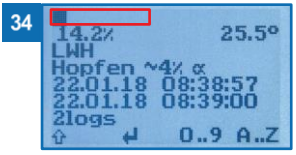
1. Perform several measurements (see "5.
2. Press on each measurement .

» Picture 33 appears on the display. The number increases with each save process.

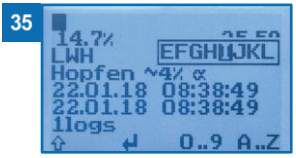


3. Press to add a name to the saved measurement series and complete the measurement series.

» Picture 34 appears on the display.



4. If an input has already been made before, the input shown can be overwritten if desired.
5. Add letters :
   Hold A..Z down to quickly navigate to the desired letter and stay on the desired letter for 3 seconds or press to apply the letter (Figure 35).

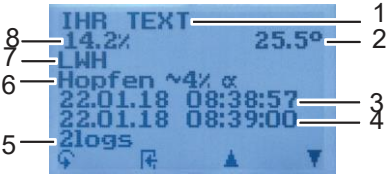


6. Add numbers:
   Press and 0..9 hold to quickly navigate to the desired number and stay on the desired number for 3 seconds or press to select the number.
7. Navigate forward/back:
   Press to switch to another input layer. Navigate forward or back with or .
8. Confirm the entry with .

» The input has been saved.

» An average value of the individual measured values was formed.

» The display shows the following information:



No	Description
1	Name of the measurement series
2	Temperature (average)
3	Start of the measurement series
4	End of the measurement series
5	Number of Measured Values Stored
6	Characteristic curve
7	Device name
8	Water content (average)

5.7 View a single metric

Prerequisite: At least one measurement (e.g. **1 log**) has been saved. In the display, .

1. Press .
2. Navigate to the desired measurement. To do this, press or .

» Picture 37 appears on the display.

» Press to exit view.

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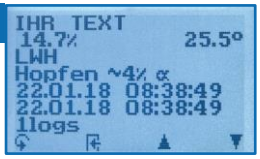


5.8 View individual measured values of a measurement series

Prerequisite: At least one series of measurements (e.g. **2 logs**) have been saved.
In the display, .

1. Press .
2. Navigate to the desired measurement series. Press for it or .

» Picture 39 appears on the display.

3. Press to switch to another input layer.

» Picture 40 appears on the display.

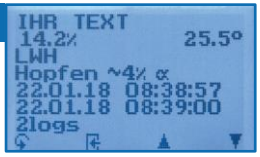
4. Press again .

» Picture 41 appears on the display.

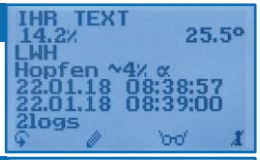
5. Navigate to the desired metric (**No.: 1, No.: 2, No.: 3**). To do this, press or .
6. Press They to exit the view.

38

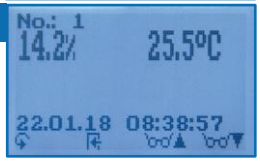
39



40



41

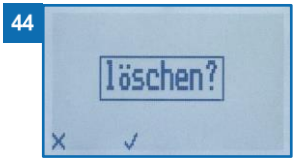


5.9 Delete all measured values (data storage)

Prerequisite: One or more measurements have been carried out and stored.

1. Press twice or hold for 2 seconds.
2. Navigate to **Data Storage** (Figure 42). To do this, press or and confirm with .
3. Navigate to **Delete Logs** (Figure 43). To do this, press or and confirm with .

» Delete the display **appears?**



4. Confirm with .

» The data storage has been deleted.

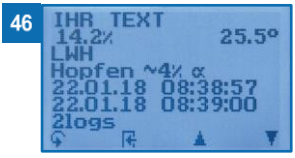
5. Press to exit the **data store** .
6. Press to exit the main menu.

5.10 Delete a single series of measurements

Prerequisite: A measured value (**1 log**) or a series of measurements (e.g. **3 logs**) has been saved. The display shows .

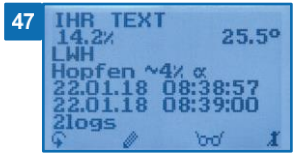
1. Press .

» Picture 46 appears on the display.



2. Navigate to the desired measurement. To do this, press or .
3. Press to switch to another input layer.

» Picture 47 appears on the display.



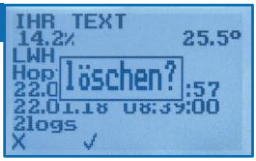
4. Press They .

» Delete the display **appears?** (Fig. 48).

5. Confirm with .

» The measurement has been deleted.

48



5.11 Delete a single value from a measurement series

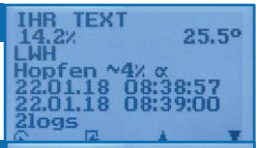
Prerequisite: A measurement series with at least 2 logs has been saved. In the display, .

49

1. Press .

» Picture 50 appears on the display.

50

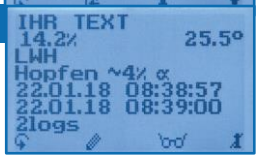


2. Navigate to the desired measurement. To do this, press or .

3. Press to switch to another input layer.

» Picture 51 appears on the display.

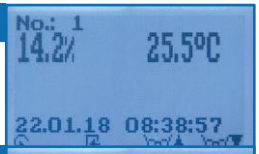
51



4. Press .

» Picture 52 appears on the display.

52

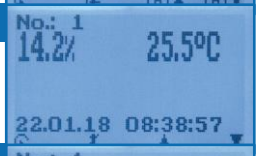


5. Navigate to the desired metric. To do this, press or .

6. Press to switch to another input layer.

» Picture 53 appears on the display.

53



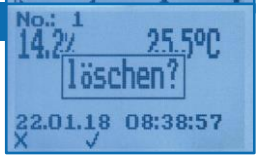
7. Press to clear the displayed value.

» Delete the display **appears?** (Fig. 54).

8. Confirm with .

» The measurement has been deleted.

54



6. Characteristic curves

Characteristic curves are available for the following products:

Product Name	Measuring material	Bale density	Unit	Measuring range	Sensor
Hops ~4% a2	Hop bales / lots	100 - 160 kg/m3	% WG	6 % - 40 %	13158 / 13736
Hops ~7% a2	Hop bales / lots	100 - 160 kg/m3	% WG	6 % - 40 %	13158 / 13736
Hops ~10% a2	Hop bales / lots	100 - 160 kg/m3	% WG	6 % - 40 %	13158 / 13736
Hops ~15% a2	Hop bales / lots	100 - 160 kg/m3	% WG	4 % - 40 %	13158 / 13736
Hops ~20% a2	Hop bales / lots	100 - 160 kg/m3	% WG	4 % - 40 %	13158 / 13736
Hops ~4% a² RT1	Hop bales	100 - 160 kg/m3	% WG	6 % - 40 %	13158
Hops ~7% a² RT1	Hop bales	100 - 160 kg/m3	% WG	6 % - 40 %	13158
Hops ~10% a² RT1	Hop bales	100 - 160 kg/m3	% WG	6 % - 40 %	13158
Hops ~15% a² RT1	Hop bales	100 - 160 kg/m3	% WG	4 % - 40 %	13158
Hops ~20% a² RT1	Hop bales	100 - 160 kg/m3	% WG	4 % - 40 %	13158
Straw	Straw bales	100 - 160 kg/m3	% WG	8 % - 40 %	13158
Hay	Hay bales	100 - 160 kg/m3	% WG	8 % - 40 %	13158
Hemp RT	Hemp Flower	100 - 160 kg/m3	% WG	6 % - 25 %	13158
Hemp	Hemp Flower	100 - 160 kg/m3	% WG	6 % - 25 %	13158 / 13736
Digit	Special products			0 - 100	13158 / 13736
para. Moisture g/m3	Kiln		g/m3	0 - 100 g/m3	12032 & 12004
Relative humidity %	Kiln		% RH	0 - 100 %	12032 & 12004
UGL Hops	Condition chamber		% Ugl.		12032 & 12004

IR Temperature	No shiny surfaces		C° / F°	-25 to 125°C -13 to 257°F	12513
Free 1	Free characteristic curve for special products				13158 / 13736
Free 2	Free characteristic curve for special products				13158 / 13736
Free 3 RT	Free characteristic curve for special products				13158 / 13736
Free 4 RT	Free characteristic curve for special products				13158 / 13736
Test block	! Only to check the measuring device !				13158

- [1]RT ... Room temperature
- [2]a ... Alpha Acid Content

The characteristic curve must be selected according to the nearest alpha acid content.

The device detects which sensor is connected and automatically activates the corresponding characteristics.

6.1 Definition of water content

The device displays the water content. This means that the humidity is calculated in relation to the total mass:

$$\%WG = \frac{M_n - M_t}{M_n} \times 100$$

Mn: Mass of sample with average water content Mt:

Mass of dried sample

%WG: Water content (according to the standard EBC 7.2 - Moisture Content of Hops and Hop Products)

6.2 Characteristic curve statement

If you are unsure about the characteristic curve selection, we recommend a comparative measurement using the kiln method (EBC 7.2 - Moisture Content of Hops and Hop Products).

Schaller GmbH will be happy to advise you personally on the selection of characteristic curves of exclusive hay/straw varieties.

6.2.1 Piercing probe

Information about the piercing probe:

Caution: With a high measurement interval and a high bale density, friction can cause the piercing probe to heat up. If the displayed temperature increases by more than 3 °C/°F above the actual sample temperature, the characteristic curve "Hops RT" must be used!

» If the material temperature is not in the range of room temperature, the characteristic curve "hops" must continue to be used, but the piercing probe must be cooled between the individual measurements.

Hops ~4% α: Hop characteristic curve for hop varieties with approx. 4% alpha content

- Displays the current water content of the hop bale in %.

» If the probe temperature is more than 3°C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hops ~7% α: Hop characteristic curve for hop varieties with approx. 7% alpha content

- Displays the current water content of the hop bale in %.

» If the probe temperature is more than 3°C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hops ~10% α: Hop characteristic curve for hop varieties with approx. 10% alpha content

- Displays the current water content of the hop bale in %.

» If the probe temperature is more than 3°C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hops ~15% α: Hop characteristic curve for hop varieties with approx. 15% alpha content

- Displays the current water content of the hop bale in %.

» If the probe temperature is more than 3°C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hops ~20% α: Hop characteristic curve for hop varieties with approx. 20% alpha content

- Displays the current water content of the hop bale in %.

» If the probe temperature is more than 3°C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hops ~4% α RT: Hop characteristic curve for hop varieties with approx. 4% alpha content

- Displays the current water content of the hop bale in %.
- The temperature of the bale must be in the range of room temperature (+/-3°C)!

» If the temperature is not in the range of room temperature, the characteristic curve "Hops ~4% α" must be used.

- For high measurement interval (heated piercing probe)

Hops ~7% α RT: Hop characteristic curve for hop varieties with approx. 7% alpha content

- Displays the current water content of the hop bale in %.
- The temperature of the bale must be in the range of room temperature (+/-3°C)!

» If the temperature is not in the range of room temperature, the characteristic curve "Hops ~4% α" must be used.

- For high measurement interval (heated piercing probe)

Hops ~10% α RT: Hop characteristic curve for hop varieties with approx. 10% alpha content

- Displays the current water content of the hop bale in %.
- The temperature of the bale must be in the range of room temperature (+/-3°C)!

» If the temperature is not in the range of room temperature, the characteristic curve "Hops ~10% α" must be used.

- For high measurement interval (heated piercing probe)

Hops ~15% α RT: Hop characteristic curve for hop varieties with approx. 15% alpha content

- Displays the current water content of the hop bale in %.
- The temperature of the bale must be in the range of room temperature (+/-3°C)!

» If the temperature is not in the range of room temperature, the characteristic curve "hops ~15% α" must be used.

- For high measurement interval (heated piercing probe)

Hops ~20% α RT: Hop characteristic curve for hop varieties with approx. 20% alpha content

- Displays the current water content of the hop bale in %.
- The temperature of the bale must be in the range of room temperature (+/-3°C)!

» If the temperature is not in the range of room temperature, the characteristic curve "hops ~20% α" must be used.

- For high measurement interval (heated piercing

probe) Straw:

- Displays the current water content of the straw bale in %.
- For wide sample temperature range

» If the probe temperature is more than 3 °C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hay:

- Displays the current water content of the hay bale in %.
- For wide sample temperature range

» If the probe temperature is more than 3 °C above the sample temperature, the piercing probe must cool down.

- Not suitable for measurements of several bales in a row!

Hemp RT:

- Displays the current water content of the hemp flower in %.
- For wide sample temperature range
- The temperature of the bale must be in the range of room temperature (+/-3°C) !

» If the temperature is not in the range of room temperature, the characteristic curve "hemp" must be used.

Hemp:

- Displays the current water content of the hemp flower in %.
- For wide sample temperature range

» If the probe temperature is more than 3 °C above the sample temperature, the piercing probe must cool down.

Digit:

- Has a unitless measurement range of 0 to 100.

» The measuring range corresponds to the entire measuring range of the device.

- The higher the displayed value, the wetter the material.

» Very dry: 0 to very wet: 100.

» With the help of a comparative measurement for a reference method, a table with comparative values can be created.

Free characteristic curves 1-4:

- There are four free characteristic curves in the measuring device.

» These can be used for special products (temperature-compensated).

» Schaller GmbH can also develop customer-specific characteristic curves of your product on request.

Test block:

- This characteristic curve is used exclusively for device testing with the optional accessory test block, Art.Nr. 12308.

6.2.2 Cone sensor

Hops ~4% α: Hop characteristic curve for hop varieties with approx. 4% alpha content

- Displays the current water content of the hops in %.
- The temperature of the measuring device and the hops must be in the same range (+/-3°C).

» If this is not the case, have the temperature adjusted.

Hops ~7% α: Hop characteristic curve for hop varieties with approx. 7% alpha content

- Displays the current water content of the hops in %.
- The temperature of the measuring device and the hops must be in the same range (+/-3°C).

» If this is not the case, have the temperature adjusted.

Hops ~10% α: Hop characteristic curve for hop varieties with approx. 10% alpha content

- Displays the current water content of the hops in %.
- The temperature of the measuring device and the hops must be in the same range (+/-3°C).

» If this is not the case, have the temperature adjusted.

Hops ~15% α: Hop characteristic curve for hop varieties with approx. 15% alpha content

- Displays the current water content of the hops in %.
- The temperature of the measuring device and the hops must be in the same range (+/-3°C).

» If this is not the case, have the temperature adjusted.

Hops ~20% α: Hop characteristic curve for hop varieties with approx. 20% alpha content

- Displays the current water content of the hops in %.
- The temperature of the measuring device and the hops must be in the same range (+/-3°C).

» If this is not the case, have the temperature adjusted.

Hemp:

- Displays the current water content of the hemp in %.
- The temperature of the meter and the hemp must be in the same range (+/- 3°C).

» If this is not the case, have the temperature adjusted.

Free characteristic curves 1-2:

- There are two free characteristic curves on the device.

» These can be used for special products (temperature-compensated).

» Schaller GmbH can also develop customer-specific characteristic curves of your product on request.

Test block:

- This characteristic curve is used exclusively for device testing with the optional accessory test block, Art.Nr. 13888.

6.2.3 Humidity Sensors

Information on Alignment Behavior

In humidity and temperature measurement, several parameters are responsible for the adjustment behavior (time until the actual measured value is displayed). The parameter that can cause the greatest measurement error is the temperature difference between the sensors or the entire measuring device and the measuring material or air. Therefore, great importance must be attached to a sufficiently long adaptation time.

Absolute humidity:

- Amount of water contained in grams per cubic metre of air.
- Absolute humidity is a direct measure of the amount of water vapor contained in a given volume of air.
- It allows you to see immediately how much condensate can be precipitated at most or how much water must be evaporated to achieve the desired humidity.

Relative humidity:

- Indicates the ratio between the instantaneous water vapor pressure and the maximum possible, the so-called saturation pressure.
- The relative humidity shows the degree to which the air is saturated with water vapour.

» 50% relative humidity: At the current temperature and pressure, half of the air is saturated with water vapour.

» 100% relative humidity: The air is at the current temperature and

current pressure.

» >100% relative humidity: The excess humidity would condense or precipitate as mist.

Ugl. Hops:

- Displays the hop equilibrium moisture (for hops stored in this environment) in % water content and the temperature in the selected unit (°C or °F).

6.2.4 Infrared

Sensor IR

Temperature Sensor:

- Displays the current temperature of the illuminated object.
- The sensor has a 1:10 optics.

» At a distance of one metre, a measuring spot of 16cm is created.

- No shiny or reflective materials can be measured!

6.3 Note on comparative measurement with the kilning method

The device is used to measure a much larger sample quantity (12 to 20 times the kiln method), and repeat measurements can be carried out very quickly on inhomogeneous material for a more accurate average calculation.

If you add up the sampling error due to the much smaller sample quantity and the proportion of volatile substances (resins, etc.), which are not water, you will achieve an accuracy of practically about +/- 3 % by means of a drying oven. If one now compares the results of the two very different methods, differences of +/- 3 % can be seen as quite normal.

The standard EBC 7.2 - Moisture Content of Hops and Hop Products also points out that the kilning method does not provide absolute values, but only comparable values.

7. Using LogMemorizer Software

Prerequisite: You have the optional USB interface installed in the device as well as the USB stick with the LogMemorizer software and the USB cable. Alternatively, you can install the software under humimeter.com/software or by scanning the QR code.

7.1 Install/open program

1. Plug the USB stick into your PC with the LogMemorizer software
   or

» Download the LogMemorizer software at humimeter.com/software or use the QR code.

2. Open the **setup** application.
3. Follow the instructions in the installer.
4. Open the LogMemorizer program.

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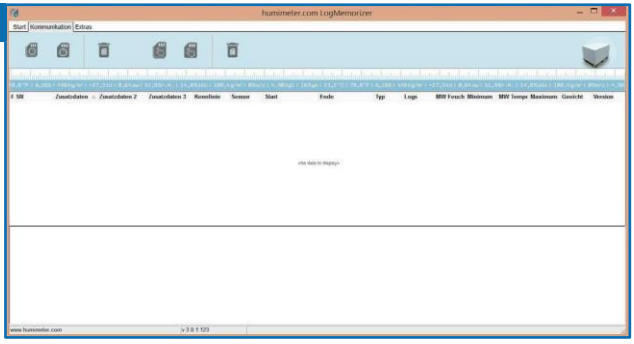


» The user interface of the LogMemorizer appears on the screen (Fig. 55).

» Before using the LogMemorizer program, the USB COM port must be configured according to the operating instructions of the LogMemorizer program.

More details about the LogMemorizer program are described in a separate user manual.

7.2 Send measured values to the PC

Prerequisite: You have installed the LogMemorizer software. One or more measurements were carried out and stored.

Option: The transmission of the measured values can be started from the humimeter FLH or from the PC.

Start the transmission of the measured values on the humimeter FLH

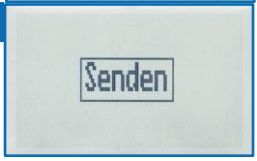
Connect the FLH humimeter and the PC using the included USB cable:


56

1. Plug the USB Mini B connector into the FLH humimeter (Figure 56).
2. Plug the USB connector into the PC.
3. Open the LogMemorizer software on your PC.
4. Turn on the humimeter FLH.
5. Press twice or hold for 2 seconds.
6. Navigate to **Send Logs** (Figure 57). To do this, press or and confirm with .
7. Navigate to **Manual Logs** (Figure 58). To do this, press or and confirm with .

57

58



59

» The Send indicator appears on the display (Fig. 59).

» All measured values stored on the humimeter FLH are sent to the PC.

Start the transfer of the measured values on the PC

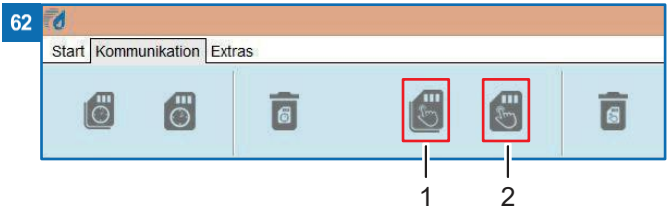
Connect the FLH humimeter and the PC using the included USB cable:


60

1. Plug the USB Mini B connector into the FLH humimeter (Fig. 60).
2. Plug the USB connector into the PC.
3. Open the LogMemorizer software on your PC.
4. Turn on the humimeter FLH.

5. Open the **Communication tab** in the LogMemorizer software (Figure 61).

6. Click the **Get All Manual Log** button (all saved values will be transferred) or **Get the last manual log** (the last saved measurement series is transferred) (Figure 62).



No	Description
1	Get All Manual Log
2	Get Last Manual Log

» The measured values stored on the humimeter FLH are sent to the PC.

8. Query device status

1. Press twice or hold for two seconds.
2. Navigate to **Status**. To do this, press or and confirm with .

» The humimeter status indicator appears on the display.

» The display shows the following information:

No	Description
1	Serial number
2	Software Version
3	Battery charge level
4	Storage status

3. Confirm with .
4. Press They to exit the main menu.

9. Make settings

9.1 Setting Bluetooth

Bluetooth is described in a separate user manual.

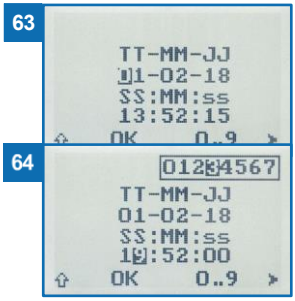
9.2 Set date/time

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Date/Time**. To do this, press or and confirm with .

» Picture 63 appears on the display.

» The format of the date is **DD-MM-YY** (Day-Month-Year).

» The format of the time is **SS:MM:ss** (Hours:Minutes:Seconds).



4. Add numbers:
   Hold 0..9 down to quickly navigate to the desired number and stay on the desired number for 3 seconds or press to accept the number (Figure 64).
5. Navigate forward:
   Navigate between **DD-MM-YY** and **SS:MM:ss** forward with .
6. Navigate back :
   Press to switch to another input layer. Navigate between **DD-MM-YY** and **SS:MM:ss** back with .
7. Confirm the date/time with OK.

» The settings have been saved.

8. Press to exit **the options**.
9. Press They to exit the main menu.

9.3 Set language

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Language**. To do this, press or and confirm with .
4. Navigate to the desired language. To do this, press or and confirm with .

» The setting has been saved.

5. Press to exit **the options**.
6. Press to exit the main menu.

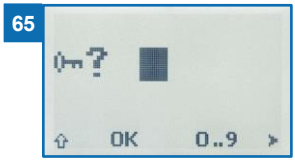
9.4 Unlock options

Prerequisite: Certain options are disabled.

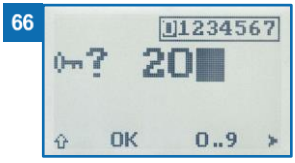
1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Unlock**. To do this, press or and confirm with .

» Picture 65 appears on the display.

» The four-digit password is the serial number of the device upon delivery.



4. Add numbers:
   Hold 0..9 to quickly navigate to the desired number and stay on the desired number for 3 seconds or press to accept the number (Figure 66).



5. Navigate back :
   Press to switch to another input layer.

Navigate back with  .

6. Confirm the four-digit password with  .

   » The setting has been saved.

» The options **°C/°F**, **burn time**, **switch-off time, adjust, calibrate, grade calibration, send online, password**, **reset** are now activated.

7. Press  to exit **the options**.
8. Press  to exit the main menu.

9.5 Lock options

After switching the device off and on, the options **°C/°F**, **burn time**, **switch-off time, adjust, calibrate**, **grade calibration, send online, password**, **reset are deactivated** again.

9.6 Set °C/°F

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold  for 2 seconds.
2. Navigate to **Options**. To do this, press  or  and confirm with  .
3. Navigate to **°C/°F**. To do this, press  or  and confirm with  .
4. Navigate to the desired Celsius (**°C**) or Fahrenheit (**°F**) temperature scale.To do this, press  or  and confirm with  .

   » The setting has been saved.

5. Press  to exit **the options**.
6. Press They  to exit the main menu.

9.7 Changing the operating level

9.7.1 Switch to Simple User

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Control Level**. To do this, press or and confirm with .

» The basic user is now enabled.

4. Press to exit **the options**.
5. Press to exit the main menu.

9.7.2 Switch to Advanced User

Prerequisite: The device is turned off.

1. Turn on the device (see "4.1 Turn on the device").
2. Hold while turning on the device and press and hold at the same time.

» The device will automatically boot into the main menu.

3. Activate all functions (see "9.4 Unlock Options").
4. Navigate to **Control Level**. To do this, press or and confirm with .

» Advanced user is now enabled.

5. Press to exit **the options**.
6. Press to exit the main menu.

9.8 Set the power saving mode

9.8.1 Adjust display illumination

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Burn time**. To do this, press or and confirm with .
4. Navigate to the desired time you want the display to remain illuminated (30 seconds/2 minutes/5 minutes/10 minutes). To do this, press or and confirm with .

» The setting has been saved.

5. Press to exit **the options**.
6. Press to exit the main menu.

9.8.2 Set the device to turn off automatically

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Power Off Time**. To do this, press or and confirm with .
4. Navigate to the desired time you want the device to remain on (3 minutes/5 minutes/10 minutes). Press or confirm with .

» The setting has been saved.

5. Press to exit **the options**.
6. Press They to exit the main menu.

9.9 Setting Grade Calibration

The setting of the grade calibration is described in a separate instruction manual.

9.10 Change password

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold  for 2 seconds.
2. Navigate to **Options**. To do this, press  or  and confirm with  .
3. Navigate to **Password**. To do this, press  or  and confirm with  .

   » The current password appears on the display.

4. Overwrite the current password. To do this  , press and hold to quickly navigate to the desired number and stay on the desired number for 3 seconds or press  to apply the number.

   Navigate back :

   Press  to switch to another input layer. Navigate back with  .

5. Confirm the new four-digit password with  .

   » The setting has been saved.

6. Press  to exit **the options**.
7. Press They  to exit the main menu.

9.11 Factory reset device

Prerequisite: All options are activated (see "9.4 Unlock Options").

1. Press twice or hold for 2 seconds.
2. Navigate to **Options**. To do this, press or and confirm with .
3. Navigate to **Reset**. To do this, press or and confirm with .

» The Reset indicator appears in the display **?** (Fig. 67).

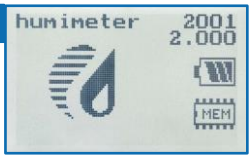
67

4. Confirm with .

» The device will be reset to factory settings. All personal settings will be lost.

» The status indicator humimeter **appears in the display** (Fig. 68).

68



» The stored measured values are not lost by the reset.

10. Care and maintenance

Regular cleaning and maintenance ensure that your device remains intact for as long as possible.

10.1 Changing batteries

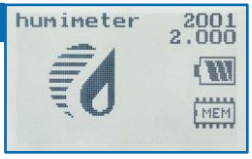
The device constantly monitors the charge level of the batteries. The status screen shows the current battery charge level.

If an exclamation mark appears in the battery symbol, the batteries must be replaced immediately (Fig. 70).

To do this, proceed as in point 3.3 Insert batteries .

As an end consumer, you are legally obliged to return all used batteries, and disposal via household waste is prohibited (Battery Ordinance).

69



70

10.2 Verification of calibration

10.2.1 Verification of the calibration of the cone sensor

The calibration of the cone sensor is to be checked every four weeks.

Prerequisite: Test block Art.Nr. 13888.
The device and the test block must have a temperature between 20.0 °C and 26.0 °C.

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- Switch on the device and select the characteristic curve "Test Block" using the arrow keys (see "4.2 Selecting Characteristic Curve").
- Hold the test block in the measuring chamber of the cone sensor as shown in Figure 71.

» The long side of the test block rests in the middle, the short side rests on one of the three contacts on the edge of the cone sensor.

» The indicated water content must be 22.0 % (+/- 0.4 %) (the moisture value is displayed in black) (Fig. 72).

» If the displayed value is outside this range (the moisture value is shown in grey) (Fig. 73), please contact your dealer or Schaller GmbH.

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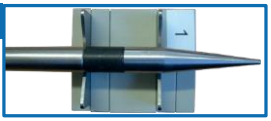
73

10.2.2 Verification of the calibration of the piercing lance

Prerequisite: Test block Art.Nr. 12308.
The device and the test block must have a temperature between 20.0 °C and 26.0 °C.

74



1. Switch on the device and select the characteristic curve "Test Block" using the arrow keys (see "4.2 Selecting Characteristic Curve").

2. Hold side 1 of the test block on the measuring tip as shown in Figure 74.

» The indicated water content must be 22.0 % (+/- 0.4 %) (the moisture value is displayed in black) (Fig. 75).

» If the displayed value is outside this range (the humidity value is displayed in grey) (Fig. 76), please contact your dealer or Schaller GmbH.

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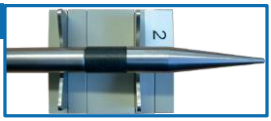
76

3. Hold side 2 of the test block on the measuring tip as shown in Figure 77.

» The indicated water content must be 41.0 % (+/- 1.0 %) (the moisture value is displayed in black) (Fig. 78).

» If the displayed value is outside this range (the moisture value is displayed in grey), please contact your dealer or Schaller GmbH.

77



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10.3 Care instructions

- Do not leave the device in the rain. The device is not waterproof.
- Do not expose the device to extreme temperatures.
- Avoid strong mechanical vibrations or loads.

10.4 Cleaning the device

Plastic housing

- Clean the plastic case with a dry cloth. Transducer
- If the measuring head becomes dirty, it can be cleaned with alcohol. Test

block

- If the test block becomes dirty, it can be cleaned with a damp lint-free cloth.

HINWEIS

Damage to electronics due to damp cleaning
Durch Eindringen von Wasser oder Putzmitteln kann das Gerät zerstört werden.

► Führen Sie ausschließlich eine trockene Reinigung des Kunststoffgehäuses .

11. Disruptions

If the measures mentioned below do not remedy the faults or if other faults not listed here occur, please contact Schaller GmbH.

Disruption	Cause	Action
Incorrect measurement	Temperature of the object to be measured outside the range of application: material below 0 °C or above +40 °C	To be measured with a temperature above 0 °C or below +40 °C.
	Temperature difference between the object to be measured and the measuring device	Have the temperature of the measuring device adjusted to that of the material to be measured (a maximum of 3 °C difference is allowed).
	Use of the wrong characteristic curve when the lance is heated	In this case, the accuracy of the measurement drops sharply.
	Wrong characteristic curve set	Before starting a measurement, check whether the correct characteristic curve (product) has been set (see "6.2 Characteristic curve explanation").
	Rain-soaked or mouldy measuring material	In this case, the accuracy of the measurement drops sharply.
	Frozen or mixed with snow	In this case, the accuracy of the measurement drops sharply.
	Injection direction (straw and hay)	The insertion direction has a major influence on the accuracy of the measurement (see "6.2 Characteristic Curve Declaration").
	Incorrect bale density	Use the bale density associated with the characteristic curve (see "6.
	Moving the measuring tip after grooving	Do not move the measuring tip after piercing.

Disruption	Cause	Action
	Water film on the measuring head	After a measurement of wet hay/straw, a film of water can form on the sensor head. Clean the two plastic parts (see "10.4 Cleaning the Device").
	Heating of the measuring head by friction at very high press densities	Allow the device to cool down .
Sources of error when checking calibration	Contact pressure	Make sure that the test block has good contact with both metal contacts.
	Position	If the test block is not held in the correct place on the meter, the display will show 0.0%.
	Dirt	The test block must be stored free of dirt, oils, dust and moisture. The cleaning of the test block is described in the chapter "10.4 Cleaning the device".
	Wrong characteristic curve	Before you start the check, check whether the correct characteristic curve "test block" has been set.
Data transfer to LogMemorizer software fails	Interface not configured	To configure the interface once, press the F1 key on your PC and read the LogMemorizer software help file.

12. Storage and disposal

12.1 Store the device

Store your device under the following conditions:

- Do not store outdoors
- Store in a dry and dust-free place
- Protect from sunlight
- Avoid mechanical vibration/loads
- Remove the batteries from the device if it will not be used for more than two months.
- Storage temperature: -20 °C to +60 °C

12.2 Disposing of the device

The equipment marked with this symbol is subject to the European Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment.
If the device is not operated within the European Union, the national disposal regulations in the respective user country must be observed.

Electrical appliances do not belong in the household waste.

Dispose of the device in an environmentally friendly manner via suitable collection systems.

13. Information about the device

13.1 CE Declaration of Conformity

DECLARATION OF CONFORMITY
DECLARATION OF CONFORMITY

Name/ Address of the manufacturer:	**Schaller Messtechnik GmbH**
Name/ address of manufacturer:	**Max-Schaller-Straße 99**
	A – 8181 St. Ruprecht
Product name:	**Humimeter**
Product designation:	
Type designation:	**BL2 ; BLL ; BLH ; FOAG ; FL1 ; FL2 ; FLH ; FLM ; FLS ; RM1; SLW ; WLW**
Type designation:	
Product Description:	**Measuring device for determining the water content in Biomass and various bulk materials**
Product description	***Measuring device for determining the water content in biomass and various bulk materials***

The designated product complies with the provisions of the Directives:

The designated product is in conformity with the European directives:

EMC Directive 2014/30/EC	***EMC Directive 2014/30/EU***
RoHS - Directive 2011/65/EC	***RoHS Directive 2011/65/EU***

The conformity of the designated product with the provisions of the Directives is demonstrated by full compliance with the following standards:

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directives:

EN 61326–1:2013	Electrical Measuring, Control, Regulation and Laboratory Equipment - EMC Requirements *Electrical equipment for measurement, control, and laboratory use – EMC requirements*
EN IEC 63000:2019-05 *replaced* **EN 50581:2012**	Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous Fabrics. *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.*

For the listed product, complete documentation with operating instructions is available in the original version.

For the mentioned product, a complete documentation with manual of instruction in original version is available.

In the event of changes not specified by the manufacturer, this declaration of conformity loses its validity.

In case of any changes not agreed upon with the manufacturer, this declaration of conformity loses its validity.

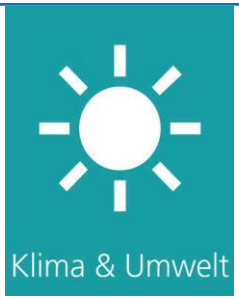
St. Ruprecht a.d. Raab, 31.07.2022

Bernhard Maunz
Legally binding signature of the issuer
Legal binding signature of the issuer

13.2 Technical data

Resolution of the display	0.1 % water content (hops and hemp), 0.5 % water content (hay, straw), 0.5 °C/°F Temperature
Measuring range	4 % to 40 % water content (characteristic curve-dependent)
Operating Temperature	0 °C to +40 °C
Temperature measurement range	-15 °C to +85 °C (measuring tip only)
Storage Temperature	-20 °C to +60 °C
Temperature compensation	Automatic
Measured value memory	up to 10,000 readings
Power supply	4 x 1.5 Volt AA Alkaline Batteries
Current consumption	60 mA (with display illumination)
Menu languages	German, English, French, Italian, Spanish, Portuguese, Czech, Polish, International, Russian
Advertising	128 x 64 matrix display illuminated
Device dimensions	145 x 65 x 27 mm
Weight device	250 g
Degree of protection	IP 40

14. Notes



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